## VERSION SHOWING CHANGES MADE

14. (Amended) A method comprising:

a) providing an array composition comprising:

i) a substrate with a surface comprising discrete sites; and

ii) a population of microspheres comprising at least a first and a second subpopulation, wherein the microspheres of each subpopulation each comprise a plurality of <u>different</u> target analytes;

wherein said microspheres are distributed on said surface;

b) contacting said array composition with a first set of readout probes;

c) detecting the presence of a first target analyte.

23. (Amended) A method of determining the identification of a nucleotide at a detection position in at least a first target sequence comprising:

a) providing an array composition comprising:

i) a substrate with a surface comprising discrete sites; and

ii) a population of microspheres comprising at least a first and a second subpopulation, wherein the microspheres of each subpopulation each comprise a plurality of <u>different</u> target sequences, <u>wherein said microspheres are distributed on said surface</u>;

b) forming a first hybridization complex between said first target sequence and at least a first readout probe; and

c) determining the nucleotide at said detection position.

27. (NEW) The method according to claim 14, 21 or 23 wherein said substrate is a fiber optic bundle.

28. (NEW) The method according to claim 14, 21 or 23 wherein said substrate is selected from the group consisting of glass and plastic.

29. (NEW) The method according to claim 14, 21, or 23 further comprising contacting said microspheres with decoder binding ligands, wherein the microspheres of each subpopulation comprises an identifier binding ligand that will bind a decoder binding ligand for identification and elucidation of said target analyte.